WHAT IS CLAIMED IS:

1. A high wet resiliency curly cellulose fiber comprising:

a cellulose fiber having a curl value of at least 0.15, treated with an intra-crystalline swelling agent; and

a polymeric reactive compound applied to the cellulose fiber to create a high wet resiliency curly cellulose fiber;

the high wet resiliency curly cellulose fiber having a wet curl value of at least 0.1.

2. The high wet resiliency curly cellulose fiber of Claim 1, wherein the polymeric reactive compound comprises a polymeric compound having repeating units containing two or more anionic functional groups that will covalently bond to hydroxyl groups of the cellulosic fibers.

3. The high wet resiliency curly cellulose fiber of Claim 2, wherein the functional groups are carboxylic acids.

4. The high wet resiliency curly cellulose fiber of Claim 3, wherein the carboxylic acids are on adjacent carbons and are capable of forming a cyclic anhydride.

5. The high wet resiliency curly cellulose fiber of Claim 1, wherein the polymeric reactive compound is a copolymer of maleic acid.

6. The high wet resiliency curly cellulose fiber of Claim 1, wherein the polymeric reactive compound is a salt of a copolymer of maleic acid.

7. The high wet resiliency curly cellulose fiber of Claim 1, wherein the cellulose fiber is structurally modified using super-molecular structure modification technology comprising treatment with an aqueous solution of an alkali metal hydroxide having a concentration greater than about 10% by weight.

8. The high wet resiliency curly cellulose fiber of Claim 1, wherein the cellulose fiber is structurally modified using a high-energy disperser.

9. The high wet resiliency curly cellulose fiber of Claim 1, wherein the cellulose fiber comprises a steam explosion fiber.

10. The high wet resiliency curly cellulose fiber of Claim 1, wherein the cellulose fiber comprises a high temperature heat treated fiber having been heated to a temperature of at least 170 degrees Celsius.

11. The high wet resiliency curly cellulose fiber of Claim 1, wherein the cellulose fiber has a curl value in a range between about 0.15 and about 0.75.

12. The high wet resiliency curly cellulose fiber of Claim 1, wherein the cellulose fiber has a curl value in a range between about 0.2 and about 0.7.

13. The high wet resiliency curly cellulose fiber of Claim 1, wherein the cellulose fiber has a curl value in a range between about 0.3 and about 0.65.

14. The high wet resiliency curly cellulose fiber of Claim 1, wherein the cellulose fiber has a curl value of at least 0.2.

15. The high wet resiliency curly cellulose fiber of Claim 1, wherein the cellulose fiber has a curl value of at least 0.3.

16. The high wet resiliency curly cellulose fiber of Claim 1, wherein the cellulose fiber has a curl value of at least 0.4.

17. The high wet resiliency curly cellulose fiber of Claim 1, wherein the high wet resiliency curly cellulose fiber has a wet curl value of at least 0.2.

18. The high wet resiliency curly cellulose fiber of Claim 1, wherein the high wet resiliency curly cellulose fiber has a wet curl value in a range between about 0.2 and about 0.4.

19. The high wet resiliency curly cellulose fiber of Claim 1, wherein the high wet resiliency curly cellulose fiber has a wet curl value in a range between about 0.3 and about 0.4.

20. The high wet resiliency curly cellulose fiber of Claim 1 having a water retention value of at least 0.4 grams/gram.

21. The high wet resiliency curly cellulose fiber of Claim 1 having a water retention value of at least 0.5 grams/gram.

22. The high wet resiliency curly cellulose fiber of Claim 1 having a water retention value of at least 0.6 grams/gram.

23. The high wet resiliency curly cellulose fiber of Claim 1 having a water retention value of at least 0.7 grams/gram.

24. A high wet resiliency curly cellulose fiber comprising:

a cellulose fiber treated with an intra-crystalline swelling agent; and

a polymeric reactive compound and a catalyst applied to the cellulose fiber to create a high wet resiliency curly cellulose fiber;

the high wet resiliency curly cellulose fiber having a water retention value of at least 0.4 grams/gram and a curl value of at least about 0.15.

25. The high wet resiliency curly cellulose fiber of Claim 24, wherein the polymeric reactive compound comprises a polymeric compound having repeating units containing two or more anionic functional groups that will covalently bond to hydroxyl groups of the cellulosic fibers.

26. The high wet resiliency curly cellulose fiber of Claim 25, wherein the functional groups are carboxylic acids.

27. The high wet resiliency curly cellulose fiber of Claim 26, wherein the carboxylic acids are on adjacent carbons and are capable of forming a cyclic anhydride.

28. The high wet resiliency curly cellulose fiber of Claim 24, wherein the polymeric reactive compound is a copolymer of maleic acid.

29. The high wet resiliency curly cellulose fiber of Claim 24, wherein the polymeric reactive compound is salt of a copolymer of maleic acid.

30. The high wet resiliency curly cellulose fiber of Claim 24, wherein the cellulose fiber is structurally modified using super-molecular structure modification technology comprising treatment with an aqueous solution of a metal hydroxide having a concentration greater than about 10% by weight.

31. The high wet resiliency curly cellulose fiber of Claim 24, wherein the cellulose fiber is structurally modified using a high-energy disperser.

32. The high wet resiliency curly cellulose fiber of Claim 24, wherein the cellulose fiber comprises a steam explosion fiber.

33. The high wet resiliency curly cellulose fiber of Claim 24, wherein the cellulose fiber comprises a high temperature heat treated fiber having been heated to a temperature of at least 150 degrees Celsius.

34. The high wet resiliency curly cellulose fiber of Claim 24, wherein the catalyst comprises an alkali metal salt of a phosphorous-containing acid.

35. The high wet resiliency curly cellulose fiber of Claim 34, wherein the alkali metal salt of a phosphorous-containing acid is selected from the group consisting of alkali metal hypophosphites, alkali metal phosphites, alkali metal polyphosphonates, alkali metal phosphates, and alkali metal sulfonates.

36. The high wet resiliency curly cellulose fiber of Claim 24, wherein the catalyst is selected from the group consisting of an imidazole, a triethyl amine, aluminum chloride, hydroxyethane diphosphoric acid, disodium acid pyrophosphate, tetrasodium pyrophosphate, pentasodium tripolyphosphate, sodium trimetaphosphate, sodium tetrametaphosphate, lithium dihydrogen phosphate, sodium dihydrogen phosphate, and potassium dihydrogen phosphate.

37. The high wet resiliency curly cellulose fiber of Claim 24, wherein the cellulose fiber has a curl value in a range between about 0.15 and about 0.75.

38. The high wet resiliency curly cellulose fiber of Claim 24, wherein the cellulose fiber has a curl value in a range between about 0.2 and about 0.7.

39. The high wet resiliency curly cellulose fiber of Claim 24, wherein the cellulose fiber has a curl value in a range between about 0.3 and about 0.65.

40. The high wet resiliency curly cellulose fiber of Claim 24, wherein the curly cellulose fiber has a wet curl value of at least 0.1.

41. The high wet resiliency curly cellulose fiber of Claim 24, wherein the curly cellulose fiber has a wet curl value of at least 0.2.

42. The high wet resiliency curly cellulose fiber of Claim 24, wherein the curly cellulose fiber has a wet curl value in a range between about 0.2 and about 0.4.

43. The high wet resiliency curly cellulose fiber of Claim 24, wherein the curly cellulose fiber has a wet curl value in a range between about 0.3 and about 0.4.

44. The high wet resiliency curly cellulose fiber of Claim 24 having a water retention value of at least 0.5 grams/gram.

45. The high wet resiliency curly cellulose fiber of Claim 24 having a water retention value of at least 0.6 grams/gram.

46. The high wet resiliency curly cellulose fiber of Claim 24 having a water retention value of at least 0.7 grams/gram.

47. A method of making high wet resiliency curly cellulose fibers, comprising the steps of:

structurally modifying a plurality of fibers using super-molecular structure modification technology, in which the plurality of fibers is treated with an intra-crystalline swelling agent and the swelling agent is subsequently washed away from the plurality of fibers, to create a plurality of curly cellulose fibers;

mixing a plurality of the curly cellulose fibers with a polymeric reactive compound;

drying the mixture of curly cellulose fibers and polymeric reactive compound;

separating the curly cellulose fibers into individual form; and

subjecting the individualized curly cellulose fibers to a temperature in a range between about 150 degrees Celsius and about 190 degrees Celsius for a sufficient length of time to initiate an intrafiber cross-linking reaction.

48. The method of Claim 47, wherein the curly cellulose fibers are separated into individual form before the mixture of curly cellulose fibers and polymeric reactive compound is dried to a dryness level of at least 80%.

49. The method of Claim 47, wherein the curly cellulose fibers are separated into individual form after the mixture of curly cellulose fibers and polymeric reactive compound is dried.

50. The method of Claim 47, wherein the polymeric reactive compound comprises a polymeric compound having repeating units containing two or more anionic functional groups that will covalently bond to hydroxyl groups of the cellulosic fibers.

51. The method of Claim 50, wherein the functional groups are carboxylic acids.

52. The method of Claim 51, wherein the carboxylic acids are on adjacent carbons and are capable of forming a cyclic anhydride.

53. The method of Claim 47, wherein the polymeric reactive compound is a copolymer of maleic acid.

54. The method of Claim 47, further comprising the step of mixing the plurality of curly cellulose fibers and the polymeric reactive compound with a catalyst.

55. The method of Claim 54, wherein the catalyst comprises an alkali metal salt of a phosphorous-containing acid.

56. The method of Claim 55, wherein the alkali metal salt of a phosphorous-containing acid is selected from the group consisting of alkali metal hypophosphites, alkali metal phosphites, alkali metal polyphosphonates, alkali metal phosphates, and alkali metal sulfonates.

57. The method of Claim 54, wherein the catalyst is selected from the group consisting of an imidazole, a triethyl amine, aluminum chloride, hydroxyethane diphosphoric acid, disodium acid pyrophosphate, tetrasodium pyrophosphate, pentasodium tripolyphosphate, sodium trimetaphosphate, sodium tetrametaphosphate, lithium dihydrogen phosphate, sodium dihydrogen phosphate, and potassium dihydrogen phosphate.

58. The method of Claim 47, wherein the concentration of the swelling agent is greater than 10%.

59. The method of Claim 47, wherein the concentration of the swelling agent is greater than 15%.

60. The method of Claim 47, wherein the swelling agent comprises sodium hydroxide.

61. The method of Claim 47, further comprising the step of structurally modifying a plurality of fibers using a high-energy disperser to create the plurality of curly cellulose fibers.

62. The method of Claim 47, wherein the plurality of curly cellulose fibers comprises a plurality of steam explosion fibers.

63. The method of Claim 47, wherein the plurality of curly cellulose fibers comprises a plurality of high temperature heat treated fibers.

64. The method of Claim 47, wherein the plurality of curly cellulose fibers has a curl value in a range between about 0.15 and about 0.75.

65. The method of Claim 47, wherein the plurality of curly cellulose fibers has a curl value in a range between about 0.15 and about 0.7.

66. The method of Claim 47, wherein the plurality of curly cellulose fibers has a curl value in a range between about 0.2 and about 0.65.

67. The method of Claim 47, wherein the plurality of curly cellulose fibers has a wet curl value in a range between about 0.1 and about 0.5.

68. The method of Claim 47, wherein the plurality of curly cellulose fibers has a wet curl value in a range between about 0.2 and about 0.4.

69. The method of Claim 47, wherein the plurality of curly cellulose fibers has a wet curl value in a range between about 0.3 and about 0.4.

70. The method of Claim 47, wherein the polymeric reactive compound is mixed with the plurality of curly cellulose fibers at an addition amount in a range between about 0.5% and about 10% by weight of the curly cellulose fibers.

71. The method of Claim 47, wherein the polymeric reactive compound is mixed with the plurality of curly cellulose fibers at an addition amount in a range between about 1% and about 8% by weight of the curly cellulose fibers.

72. The method of Claim 47, wherein the polymeric reactive compound is mixed with the plurality of curly cellulose fibers at an addition amount in a range between about 1.5% and about 6% by weight of the curly cellulose fibers.

73. The method of Claim 47, wherein the high wet resiliency curly cellulose fibers have a water retention value of at least 0.5 grams/gram.

74. The method of Claim 47, wherein the high wet resiliency curly cellulose fibers have a water retention value of at least 0.6 grams/gram.

75. The method of Claim 47, wherein the high wet resiliency curly cellulose fibers have a water retention value of at least 0.7 grams/gram.